

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**



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Order Instituting Rulemaking to Adopt
Biomethane Standards and Requirements,
Pipeline Open Access Rules, and Related
Enforcement Provisions.

R.13-02-008
(Filed February 21, 2013)

**JOINT OPENING BRIEF OF SOUTHERN CALIFORNIA GAS COMPANY (U 904 G),
SAN DIEGO GAS & ELECTRIC COMPANY (U 902 G), PACIFIC GAS AND
ELECTRIC COMPANY (U 39 G), AND SOUTHWEST GAS CORPORATION (U 905 G)**

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Dated: September 5, 2013

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SUMMARY OF RECOMMENDATIONS

SoCalGas, SDG&E, PG&E, and Southwest Gas respectfully request that the Commission take the following actions:

- Adopt the health protective constituent levels proposed by CARB and OEHHA.
- Adopt the pipeline and pipeline facility protective constituent levels proposed by the Utilities.
- Adopt the initial gas quality review protocols proposed by the Utilities, including:
 - Pre-interconnection supplier testing of the raw biogas to determine biogas constituents;
 - Pre-interconnection supplier testing of the biomethane to determine the biomethane constituents, whether the biomethane constituents are below the lower action levels, and whether the biomethane complies with existing gas quality specifications;
 - A 24-hour utility start-up test at the interconnection to determine the biomethane constituents, whether the biomethane constituents are below the lower action levels, and whether the biomethane complies with existing gas quality specifications; and
 - A second utility test at the interconnection, after the 24-hour start-up test results are received, to confirm the consistency of the biomethane quality and compliance with gas quality standards.
- Adopt the periodic testing and monitoring protocols proposed by the Utilities, including:
 - Annual comprehensive biomethane constituent analysis;
 - Quarterly testing for the biomethane constituents which did not test below the trigger levels, including during the initial gas quality review's

- biomethane tests (the annual comprehensive constituent analysis would replace one quarterly test);
- Quarterly testing will end for a constituent when the constituent tests below the trigger level for four consecutive quarterly constituent tests (the biomethane will still be subject to annual comprehensive constituent analysis); and
 - Quarterly testing will resume if a biomethane constituent not subject to quarterly testing subsequently tests above the trigger level.
- Adopt the shut-off procedures proposed by the Utilities, including:
 - Shutting-off a supplier when a biomethane constituent tests above a lower action level three times in a twelve month period; and
 - Shutting-off a supplier when a biomethane constituent tests above a upper action level once.
 - Adopt the re-startup testing procedures requiring the supplier to undergo modified start-up testing when there has been a denial of access or modification to the biogas source or upgrading and conditioning facilities. These procedures include:
 - Supplier testing of the biomethane upstream of the interconnection to determine the biomethane constituents, whether the biomethane constituents are below the lower action levels, and whether the biomethane complies with existing gas quality specifications; and
 - Utility testing of the biomethane at the interconnection after flow is resumed to determine whether the biomethane constituents are below the lower action levels and whether the biomethane complies with existing gas quality specifications.
 - Adopt a testing verification process when there are Quality Assurance/Quality Control issues, discrepancies, or qualifiers indicated by the certified laboratory testing results.

- Adopt the reporting and recordkeeping requirements proposed by CARB and OEHHA subject to the Utilities' clarification that the supplier be the testing entity for testing performed upstream of the interconnect and the utility be the testing entity for testing performed at the interconnect.
- Adopt the Utilities' proposed tariff amendments, including those to eliminate existing limitations on biomethane (excluding limits applicable to hazardous waste landfills) and documenting non-discriminatory open access to the Utilities' systems.

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COMPANY, AND SOUTHWEST GAS CORPORATION**

I. INTRODUCTION

Southern California Gas Company (SoCalGas), San Diego Gas & Electric Company (SDG&E), Pacific Gas and Electric Company (PG&E), and Southwest Gas Corporation (Southwest Gas) (collectively “Utilities”) are pleased to submit their Joint Opening Brief in this Rulemaking 13-02-008 to adopt Biomethane Standards and Requirements, Pipeline Open Access Rules, and Related Enforcement Provisions (Biomethane Rulemaking).

Section II provides a brief procedural background of the Biomethane Rulemaking and the legislation behind it. Section III explains the Utilities’ proposed biomethane constituent levels and related testing and monitoring protocols. Section IV describes pipeline access rules and how non-discriminatory open access is provided to gas producers. Section V discusses existing enforcement provisions and the sufficiency of those provisions to promote compliance with standards, requirements, and rules adopted in this proceeding. Finally, Section VI presents a short conclusion.

II. BACKGROUND

The Biomethane Rulemaking was opened to implement changes to the California Health and Safety Code and Public Utilities Code as required by Assembly Bill 1900. The specific scope of the Biomethane Rulemaking is set forth in Assembly Bill 1900, the Biomethane

Rulemaking's Order Instituting Rulemaking (OIR), and the Biomethane Rulemaking's Scoping Memo and Ruling.

A. Assembly Bill 1900

Assembly Bill 1900 was passed into law on September 27, 2012, and amends certain sections of the California Health and Safety Code, Public Resources Code, and Public Utilities Code.¹ The Biomethane Rulemaking was instituted to implement Assembly Bill 1900's addition of California Health and Safety Code § 25421 and California Public Utilities Code § 784. Assembly Bill 1900 involves significant work by numerous state agencies, but for purposes of the Biomethane Rulemaking, requires specific undertakings by the Office of Environmental Health Hazard Assessment (OEHHA), the California Air Resources Board (CARB), and the California Public Utilities Commission (CPUC or Commission).

First, California Health and Safety Code § 25421 tasks OEHHA, CARB, and the Commission with developing and implementing health and pipeline facility protective biomethane constituent levels and associated testing and monitoring protocols. OEHHA must “compile a list of constituents of concern that could pose risks to human health and that are found in biogas at concentrations that significantly exceed those found in natural gas”² and “determine health protective levels for the list of constituents of concern identified” for biogas.³ CARB must then “identify realistic exposure scenarios” and “identify the health risks associated with the exposure scenarios for the constituents of concern” identified by OEHHA.⁴ Using OEHHA's health protective levels and CARB's exposure scenarios, CARB must then determine “appropriate concentrations for constituents of concern”⁵ and “identify reasonable and prudent monitoring, testing, reporting, and recordkeeping requirements, separately for each source of biogas, that are sufficient to ensure compliance with the health protective standards....”⁶ Giving

¹ See Assembly Bill 1900 (Stats. 2012, Ch. 602).

² California Health and Safety Code § 25421(a)(1).

³ California Health and Safety Code § 25421(a)(2).

⁴ California Health and Safety Code § 25421(a)(3).

⁵ California Health and Safety Code § 25421(a)(4).

⁶ California Health and Safety Code § 25421(a)(5).

due deference to the work performed by CARB and OEHHA, the Commission must then adopt biomethane standards that “specify, for constituents that may be found in that biomethane, concentrations that are reasonably necessary to ensure” the protection of both “human health” and “pipeline and pipeline facility integrity and safety”⁷, and adopt “monitoring, testing, reporting, and recordkeeping requirements” to protect pipeline and pipeline facility integrity and safety.⁸ The Commission will then require gas corporations to condition access to utility pipelines on the biomethane supplier meeting the standards and requirements adopted by the Commission.⁹

Second, pursuant to Assembly Bill 1900’s addition of California Public Utilities Code § 784, the Commission is required to “adopt pipeline access rules that ensure that each gas corporation provides nondiscriminatory open access to its pipeline system to any party for the purposes of physically interconnecting with the gas pipeline system and effectuating the delivery of gas.”¹⁰ Consistent with these statutes, the Biomethane Rulemaking was opened to adopt standards and requirements relative to health, safety, and pipeline facility integrity for biomethane injected into pipelines, and pipeline access rules which provide for non-discriminatory open access to the Utilities’ systems.

B. Biomethane Rulemaking Order Instituting Rulemaking

The Biomethane Rulemaking OIR was issued on February 21, 2013. It discusses Assembly Bill 1900’s statutory requirements¹¹ and the issues the Commission is tasked with addressing:

We open this rulemaking to implement two provisions of Assembly Bill 1900 (Stats. 2012, Ch. 602). First, we must adopt standards and requirements relative to health, safety and facility integrity for biomethane injected into

⁷ California Health and Safety Code § 25421(c)(1) & (c)(2).

⁸ California Health and Safety Code § 25421(d).

⁹ California Health and Safety Code § 25421(f)(2).

¹⁰ California Public Utilities Code § 784.

¹¹ See Order Instituting Rulemaking into Biomethane Issues, Pipeline Open Access, and Related Enforcement Provisions, issued February 21, 2013, mimeo., at 6-7.

common carrier pipelines, including the obligation that gas corporation tariffs condition access to those pipelines on customers meeting the adopted standards and requirements. Second, we must adopt pipeline access rules to ensure that each gas corporation provides non-discriminatory open access to its system. We undertake this work in the context of our core mission to ensure public health and safety of utility service, including necessary enforcement.¹²

C. Biomethane Rulemaking Scoping Memo and Ruling

The Scoping Memo and Ruling of the Assigned Commissioner and Administrative Law Judge was issued on May 2, 2013 and similarly describes the scope of this proceeding:

The California Public Utilities Commission (Commission) opened this Rulemaking on February 21, 2013, to implement two provisions of AB 1900. First, Health and Safety Code Section 25421(c) requires the Commission to adopt, on or before December 31, 2013, “standards that specify, for constituents that may be found in that biomethane, concentrations that are reasonably necessary to ensure” the protection of human health, and pipeline and pipeline facility integrity and safety. Also on or before December 31, 2013, Health and Safety Code Section 25421(d) requires the Commission to adopt “the monitoring, testing, reporting, and recordkeeping requirements identified” by the CARB. In addition, these Health and Safety Code provisions state that the Commission is to give due deference to CARB’s determinations.

Second, the Rulemaking was also opened to address the addition of Public Utilities Code Section 784. That code section requires the Commission to “adopt pipeline access rules that ensure that each gas corporation provides nondiscriminatory open access to its gas pipeline system to any party for the purposes of physically interconnecting with the gas pipeline system and effectuating the delivery of gas.” In addition, Health and Safety Code Section 25421(f)(2) provides that the Commission “shall require gas corporation tariffs to condition access to common carrier pipelines on the applicable customer meeting the standards and requirements” that have been adopted by the Commission.¹³

¹² *Id.* at 2.

¹³ Scoping Memo and Ruling of the Assigned Commissioner and Administrative Law Judge, issued May 2, 2013, mimeo., at 2-3.

Additionally, the Scoping Memo and Ruling lists the issues to be addressed in the Biomethane Rulemaking:

- In order to implement AB 1900, what standards and requirements should the Commission adopt for constituents that may be found in biomethane that is to be injected into a common carrier pipeline?¹⁴
- What is a common carrier pipeline for the purposes of AB 1900?¹⁵
- To ensure human safety, and pipeline and pipeline facility integrity and safety, what issues need to be considered for the Commission to adopt monitoring, testing, reporting, and recordkeeping requirements for biogas?¹⁶
- What type of process should be adopted to review and update the biomethane standards for the protection of human health and pipeline integrity and safety as required by AB 1900?¹⁷
- What type of process should be adopted to review and update the monitoring, testing, reporting, and recordkeeping requirements as required by AB 1900?¹⁸
- What tariff requirements should the Commission adopt for gas corporation tariffs so that the tariffs condition access to common carrier pipelines on the applicable customer meeting the Commission-adopted standards and requirements and safety procedures?¹⁹
- What rules should the Commission adopt to ensure that each gas corporation provides non-discriminatory open access to its gas pipeline system to any party for the purposes of physically interconnecting with the gas pipeline system and effectuating the safe delivery of gas?²⁰

¹⁴ *Id.* at 4.

¹⁵ *Id.*

¹⁶ *Id.*

¹⁷ *Id.*

¹⁸ *Id.*

¹⁹ *Id.* at 5.

²⁰ *Id.*

- Whether other requirements or processes need to be adopted to prevent a person from knowingly selling, supplying, or transporting, or knowingly causing to be sold, supplied, or transported, biogas collected from a hazardous waste landfill to a gas corporation through a common carrier pipeline?²¹
- Whether other requirements or processes need to be adopted to prevent a gas corporation from knowingly purchasing gas collected from a hazardous waste landfill through a common carrier pipeline?²²
- In addition to Resolution ALJ-274, what other enforcement tools are necessary to ensure compliance with Commission-adopted standards, requirements, and rules?²³

The Utilities' Joint Opening Brief addresses the issues before the Commission consistent with the scope delineated in Assembly Bill 1900, the Commission's OIR, and the May 2, 2013 Scoping Memo and Ruling.

III. BIOMETHANE AND RELATED TESTING AND MONITORING PROTOCOLS CONSTITUENTS

The biomethane standards adopted by the Commission in this Biomethane Rulemaking should mitigate risks to human health and to pipeline facility integrity. To accomplish this, the Utilities have proposed constituents to be tested, acceptable constituent levels, initial gas quality review requirements, ongoing periodic testing and monitoring protocols, and recordkeeping requirements.

The Utilities' gas quality standards are currently governed by SoCalGas' and SDG&E's Tariff Rules 30, PG&E's Gas Tariff Rule 21, and Southwest Gas' Tariff Rule 21 (collectively referred to as the "Gas Quality Tariff Rules").²⁴ The Gas Quality Tariff Rules provide the general terms and conditions applicable whenever the Utilities transport customer-owned gas

²¹ *Id.*

²² *Id.*

²³ *Id.*

²⁴ Ex. Utilities-1 (Rivera/Raymundo/Frehse) at 5.

over their pipeline systems.²⁵ The supplier is responsible for processing the gas, as necessary, to meet the Gas Quality Tariff Rule specifications for pipeline quality gas, so that it is then capable of being received into the Utilities' gas transportation systems for delivery.²⁶ As a result of this Biomethane Rulemaking, the Utilities' Gas Quality Tariff Rules will be updated to incorporate maximum biomethane concentration limits adopted by the Commission to protect human health and pipeline facilities.²⁷ As such, in order to interconnect with the utility pipeline system, the supplier will be required to provide biomethane that meets existing gas quality requirements and the incremental biomethane constituent specifications developed in this proceeding.²⁸

On May 15, 2013, CARB and OEHHA submitted their Assembly Bill 1900 report -- "Recommendations to the California Public Utilities Commission Regarding Health Protective Standards for the Injection of Biomethane into the Common Carrier Pipeline". The CARB and OEHHA report notes that "[w]hen biogas is upgraded to pipeline quality, it is referred to as biomethane. Biomethane is interchangeable with natural gas."²⁹ Further, CARB and OEHHA found that when biomethane is upgraded and conditioned so as to be interchangeable with natural gas "the injection of biomethane does not present additional health risk as compared to natural gas."³⁰ CARB and OEHHA's conclusion, however, assumes that "the majority of the constituents of concern in the biogas" are removed "or reduced to concentrations below the OEHHA recommended health protective levels during the upgrading process"³¹ and the biomethane also complies with "requirements relating to pipeline integrity, heating value, and other requirements not related to health-based standards."³²

Based on current knowledge of potential biomethane constituents, the Utilities would not dispute a determination that biomethane meeting the Utilities' existing gas quality specifications

²⁵ *Id.*

²⁶ *Id.*

²⁷ *Id.*

²⁸ *Id.* at 5-6.

²⁹ Ex. CARB-1 (CARB/OEHHA) at 1.

³⁰ *Id.* at 2-3.

³¹ *Id.* at 2.

³² *Id.* at 66.

plus the Utilities' proposed incremental biomethane constituent specifications would be as safe as natural gas.³³ Meaning, in order for biomethane to be interchangeable with natural gas, biomethane must meet the biomethane constituent specifications developed in this Biomethane Rulemaking plus existing gas quality specifications developed in prior Commission proceedings.³⁴

To achieve this interchangeability, CARB and OEHHA propose testing and monitoring protocols that rely on identifying biomethane constituents and the level of those constituents relative to developed trigger and action levels. The testing and monitoring protocols proposed by CARB and OEHHA are based on this trigger and action level concept and include start-up testing, and ongoing periodic testing and monitoring protocols:

ARB staff recommends that initial monitoring be conducted prior to the first injection of biomethane into the pipeline, and then periodic testing be performed. The frequency of the periodic testing would be dependent on whether the individual constituents are above the trigger levels, and the total potential cancer and non-cancer risks associated with all the constituents of concern above the trigger levels.³⁵

The standards adopted in this rulemaking, however, need to maintain flexibility to allow the Utilities to test for, and respond to, a range of constituents which may be found at the varying biogas sources.³⁶ As such, in addition to CARB and OEHHA's recommended testing, the Utilities propose: (1) pre-interconnection testing of raw biogas and additional biomethane analysis to determine biogas constituent levels, confirm biomethane constituent consistency, and allow for the design of interconnection facilities and testing and monitoring protocols specific to that biogas source; (2) annual comprehensive constituent analysis to determine the absence or presence of known or additional constituents of concern; and (3) enhanced testing procedures in the event the biomethane supply contains biomethane constituent levels above the proposed

³³ Ex. Utilities-3 (Rivera/Raymundo/Frehse) at 3.

³⁴ *Id.* at 3-4.

³⁵ Ex. CARB-1 (CARB/OEHHA) at 64.

³⁶ Ex. Utilities-1 (Rivera/Raymundo/Frehse) at 10.

trigger levels.³⁷ Through these proposals, the Utilities intend to design interconnection facilities and testing and monitoring protocols unique to each biogas source, while continuing to allow for sufficient flexibility to respond to differing site conditions or changes to the biomethane. The reasonableness of the Utilities' recommendations is supported by intervenor evidence:

In short, gas quality considerations are not a barrier for introducing renewable gas into the North American pipeline grid. Various technologies exist today to process raw biogas effectively to yield a product indistinguishable from a constituent perspective to natural gas. Biogas can be treated to remove trace constituents to comparable levels in traditional pipeline supplies. *However, continuous monitoring of critical variables is necessary to ensure the treatment process remains effective.* Development of gas quality monitoring plans is an important component in an overall strategy to maximize introduction of this valuable resource. It should be noted that *each evaluation is unique, and that pre-treatment testing and historical evaluation of raw biogas are necessary to ensure treatment systems are optimized. A "one size fits all" solution is not the optimum solution to the issue of gas treatment...*³⁸

Consistent with the above, the Utilities' suggested testing and monitoring protocols start with the CARB and OEHHA recommendations, and then propose additional testing and monitoring protocols to (1) design and construct monitoring facilities and procedures optimized for each biogas supply; and (2) implement sufficient procedures to monitor the continued effectiveness of the biogas treatment process.

A. Constituents to be Tested and Acceptable Constituent Levels³⁹

The constituent levels can be split into two categories: constituent levels to protect human health, and constituent levels to protect pipeline facility integrity. The proposed human health constituent levels were developed by CARB and OEHHA. The proposed pipeline facility integrity constituent levels were developed by the Utilities and are based on biogas studies,

³⁷ Ex. Utilities-3 (Rivera/Raymundo/Frehse) at 7.

³⁸ Ex. CRNG-2 (Escudero) at Attachment 10, page 9 (National Grid White Paper) (emphasis added).

³⁹ CARB and OEHHA would limit the constituents to be tested based on the biogas source. (Ex. CARB-1 (CARB/OEHHA) at 63 ["The constituents of concern that must be measured depend on the biogas source."]) The Utilities propose testing for all constituents for each biogas source. (Ex. Utilities-2 (Rivera/Raymundo/Frehse) at 6.) Allowing for comprehensive testing of each biogas source is prudent to determine the constituents present and the concentrations of those constituents. To limit testing based on the source could result in testing that failed to determine the full range of constituents present and could potentially result in the introduction of constituents of concern to the pipeline system. *Id.*

equipment manufacturer specifications, and information on potential constituent impacts published in handbooks and professional association materials.⁴⁰ The approach used by CARB and OEHHA (and mirrored by the Utilities) is summarized below:

Briefly, the approach used by ARB staff for risk management was to use the OEHHA health protective levels as the “trigger” for requiring routine monitoring of a constituent of concern. If an individual constituent of concern was determined to be present in the upgraded biomethane at a concentration that would result in either a potential cancer risk of >1 in a million or a hazard quotient of >0.1, then that constituent would be subject to quarterly monitoring. Upon each quarterly monitoring event, the operator is to determine the total potential cancer risk and hazard index for the constituents of concern subject to monitoring and verify if the risk levels are below the lower action level (potential cancer risk >10 in a million or a HI of >1). If the total risk levels exceed the lower action levels 3 times in a 12-month period, the biomethane flow to the pipeline would be shut off (typically diverted to a flare) and the operator would need to determine how to bring the measured levels in the biomethane to below the lower action level. If at any time the total potential cancer risk or hazard index for the constituents of concern subject to monitoring were to exceed the upper action level (potential cancer risk >25 in a million or a HQ >5) the facility would also be subject to shut down.⁴¹

Trigger levels are intended to provide an indication that concentrations are reaching a heightened level of concern and additional monitoring or testing is warranted.⁴² Trigger levels indicate a need for quarterly periodic testing and a need to work with the supplier to lower the constituent level.⁴³ The Utilities propose expanding the impact of trigger levels in instances where a supplier is consistently unable to maintain constituent levels below a trigger level; allowing for additional testing or the development of other safeguards. If a supplier is consistently unable to stay below trigger levels, it could indicate a need for additional monitoring equipment (*e.g.*, more frequent testing or on-line monitors for that constituent) or, in the case of those constituents without shut-off levels, the development of a shut-off level for that supplier (this would require analysis of how that constituent[s] would impact the Utilities’ human health

⁴⁰ Ex. Utilities-2 (Rivera/Raymundo/Frehse) at 6.

⁴¹ Ex. CARB-1 (CARB/OEHHA) at 62.

⁴² Ex. Utilities-2 (Rivera/Raymundo/Frehse) at 6-7.

⁴³ *Id.*

and safety thresholds and pipeline facilities).⁴⁴ In that sense, the trigger levels are akin to a warning or alarm. If the alarm stays on for an extended period of time, the Utilities must be able to respond.

Action levels are broken down into lower action levels and upper action levels.⁴⁵ The lower action level would be used to screen suppliers during the initial gas quality review and would serve as an ongoing screening level during periodic testing.⁴⁶ A supplier would be required to demonstrate biomethane constituent levels below the lower action levels during the initial gas quality review to begin supplying biomethane to the Utilities' pipeline systems.⁴⁷ In subsequent tests, if the supplier exceeds the lower action level three times in a twelve month period, that supplier would be shut-off and subject to retest procedures.⁴⁸ The upper action level would be an immediate shut-off level indicating that the supplier would be denied access to the Utilities' pipeline systems until the supplier can demonstrate compliance with gas quality and constituent requirements.⁴⁹

i. CARB and OEHHA's Health Protective Biomethane Constituent Levels

To the best of the Utilities' knowledge, the constituents and constituent levels proposed by CARB and OEHHA appear reasonable in protecting human health. Additionally, CARB and OEHHA's recommendations do not set standards which are overly conservative; as the agencies note: "Based on the available data, for most biomethane projects it is unlikely that the constituents of concern will be above the trigger level."⁵⁰ The CARB and OEHHA proposed health protective constituents and constituent levels are listed below:⁵¹

⁴⁴ *Id.*

⁴⁵ Ex. CARB-1 (CARB/OEHHA) at 68; Ex. Utilities-2 (Rivera/Raymundo/Frehse) at 7.

⁴⁶ *Id.*

⁴⁷ Ex. CARB-1 (CARB/OEHHA) at 66; Ex. Utilities-2 (Rivera/Raymundo/Frehse) at 7.

⁴⁸ Ex. CARB-1 (CARB/OEHHA) at 68; Ex. Utilities-2 (Rivera/Raymundo/Frehse) at 7.

⁴⁹ *Id.*

⁵⁰ Ex. CARB-1 (CARB/OEHHA) at 70.

⁵¹ *Id.* at 4.

Constituent of Concern		Risk Management Levels (Health Based Standards) mg/m ³ (ppmv)	
	Trigger Level	Lower Action Level	Upper Action Level
Carcinogenic Constituents of Concern			
Arsenic	0.019 (0.006)	0.19 (0.06)	0.48 (0.15)
p-Dichlorobenzene	5.7 (0.95)	57 (9.5)	140 (24)
Ethylbenzene	26 (6.0)	260 (60)	650 (150)
n-Nitroso-di-n-propylamine	0.033 (0.006)	0.33 (0.06)	0.81 (0.15)
Vinyl Chloride	0.84 (0.33)	8.4 (3.3)	21 (8.3)
Non-carcinogenic Constituents of Concern			
Antimony	0.60 (0.12)	6.0 (1.2)	30 (6.1)
Copper	0.060 (0.02)	0.60 (0.23)	3.0 (1.2)
Hydrogen Sulfide	30 (22)	300 (216)	1,500 (1,080)
Lead	0.075 (0.009)	0.75 (0.09)	3.8 (0.44)
Methacrolein	1.1 (0.37)	11 (3.7)	53 (18)
Alkyl Thiols (Mercaptans)	N/A (12)	N/A (120)	N/A (610)
Toluene	904 (240)	9,000 (2,400)	45,000 (12,000)

Some of the constituents addressed by CARB and OEHHA are already regulated by existing Commission rules and regulations.⁵² CARB and OEHHA note the overlap between existing utility gas quality requirements and CARB and OEHHA's proposed constituent levels for hydrogen sulfide and mercaptans. The Utilities support CARB and OEHHA's recommendation that existing rules be viewed as sufficient in monitoring hydrogen sulfide and mercaptans:

Monitoring for hydrogen sulfide and mercaptans represents a special situation because the utility companies already closely monitor these compounds.... Given that the utility tariff levels are below the trigger levels specified above, we recommend that existing monitoring procedures used to ensure compliance with tariff requirements be used to satisfy the monitoring procedures that we are recommending, as long as the monitoring is conducted at least as frequently.⁵³

⁵² Ex. CARB-1 (CARB/OEHHA) at 3, footnote 2. ("Both hydrogen sulfide and mercaptans are typically addressed by natural gas tariffs. In the event there is a natural gas or other tariff for these compounds that is lower than the OEHHA health protective level (trigger) then compliance with the tariff is sufficient for demonstrating compliance with the health protective standards recommended.")

⁵³ *Id.* at 64-65.

In addition to the health protective constituent levels developed by CARB and OEHHA, the Utilities also propose inclusion of the following pipeline and pipeline facility protective biomethane constituent levels.

ii. Utilities' Proposed Pipeline and Pipeline Facility Protective Biomethane Constituent Levels

Assembly Bill 1900 requires the Commission to adopt biomethane constituent standards which would protect “pipeline and pipeline facility integrity and safety.”⁵⁴ This is an area which CARB and OEHHA did not address, but CARB and OEHHA did note that the Commission would be reviewing pipeline integrity and safety aspects: “[p]er AB 1900, ARB and OEHHA are not to consider pipeline integrity and safety aspects that may be associated with the use of biogas; the CPUC will address these aspects during its rulemaking process.”⁵⁵ As such, in an effort to protect pipeline and pipeline facility integrity, the Utilities have proposed the inclusion of constituent levels for ammonia, biologicals, hydrogen, mercury, and siloxanes. The Utilities proposed pipeline and pipeline facility protective constituent levels include trigger levels and, in the case of siloxanes, a lower action level.

As discussed above, the trigger level is a level signifying the need for additional action. This may include an increase in utility testing frequency, the installation of additional monitoring equipment at the interconnection, a warning to the supplier of the constituent levels, and/or the establishment of a supplier-specific constituent shut-off limit.⁵⁶ The proposed lower action level for siloxanes would function in the same way the previously discussed lower action levels function -- denying access if the biomethane tests above the lower action level during startup testing and denying access if the biomethane tests above the lower action level three times in a twelve month period.⁵⁷ The Utilities did not propose lower and upper action levels for each constituent, because the impact of the constituents could vary depending on the location and the

⁵⁴ California Health and Safety Code § 25421(c)(1) & (c)(2).

⁵⁵ Ex. CARB-1 (CARB/OEHHA) at 1.

⁵⁶ Ex. Utilities-2 (Rivera/Raymundo/Frehse) at 6-7.

⁵⁷ *Id.* at 7.

pipeline facilities and materials nearby. If a supplier was continuously above a trigger level, however, action levels would be developed for that supplier.

a. Ammonia

The Utilities propose testing and monitoring for ammonia in biomethane intended to be injected into the pipeline systems. Specifically, the Utilities suggest a trigger level of 0.001%.⁵⁸ The Utilities proposed trigger level for ammonia is based on biogas studies and information on potential constituent impacts published in handbooks and professional association materials, and is consistent with published equipment manufacturer specifications.⁵⁹

Ammonia may be present in biomethane derived from animal waste or manure,⁶⁰ and the presence of ammonia could negatively impact downstream gas processing equipment and cause odorization issues in the pipeline gas.⁶¹ Additionally, when present in gas that is combusted, ammonia can form nitrogen oxides that may impact end-use operations.⁶² Finally, copper-based alloys, including brasses, have been found to crack when exposed to ammonia vapor.⁶³

b. Biologicals

The Utilities propose testing and monitoring for biologicals in biomethane intended to be injected into the pipeline systems. Specifically, the Utilities suggest a trigger level of 4 x 10⁴/scf (qPCR per group).⁶⁴

Biologicals and particulate matter may be carried along from the production process into the final renewable gas product⁶⁵ and should be monitored and tested to prevent the introduction of biologicals, and the onset of microbial-influenced corrosion, which can degrade the integrity

⁵⁸ *Id.* at Appendix A.

⁵⁹ *See* Ex. Utilities-1 (Rivera/Raymundo/Frehse) at 8-9; *see also* Ex. Utilities-3 (Rivera/Raymundo/Frehse) at 10 (*referencing* American Society for Materials, Corrosion Handbook vol. 13 at 125-154).

⁶⁰ Ex. CRNG-2 (Escudero) at Attachment 8, page 3 (GTI 2012 Report).

⁶¹ *Id.* at Attachment 7, page 25 (GTI 2012 Report).

⁶² *Id.* at Attachment 7, page 25 (GTI 2012 Report).

⁶³ Ex. Utilities-3 (Rivera/Raymundo/Frehse) at 10 (*referencing* American Society for Materials, Corrosion Handbook vol. 13 at 633).

⁶⁴ Ex. Utilities-2 (Rivera/Raymundo/Frehse) at Appendix A.

⁶⁵ Ex. CRNG-2 (Escudero) at Attachment 7, page 18 (GTI 2012 Report).

of the pipeline, and the safety and reliability of utility operations.⁶⁶ Because biologicals may be transported with particulate matter, proper filtration is an effective means of reducing their carryover.⁶⁷ As such, in addition to the above trigger level, the amount and size of biologicals and particulate matter in any fuel gas should be minimized using a sub-micron filter (<0.2 micron) to avoid contamination, clogging, and erosion of processing plant and distribution line components.⁶⁸

c. Hydrogen

The Utilities propose testing and monitoring for hydrogen in biomethane intended to be injected into the pipeline systems. Specifically, the Utilities suggest a trigger level of 0.1%.⁶⁹

The impact from high levels of hydrogen on pipeline materials of construction can depend on a multitude of variables.⁷⁰ However, studies indicate that hydrogen degradation of metals and alloys (known as hydrogen embrittlement), hydrogen stress cracking, and loss of tensile ductility in all steels, nickel alloys (gas engine parts) and aluminum alloys occurs at concentrations as low as 0.1 ppm (0.00001% by volume).⁷¹ The Utilities' proposed trigger level is consistent with the maximum concentration of hydrogen typically found in tariffs for delivered natural gas, which ranges from 400 to 1000 ppm (0.04 to 0.1 % by volume).⁷²

d. Mercury

The Utilities propose testing and monitoring for mercury in biomethane intended to be injected into the pipeline systems. Specifically, the Utilities suggest a trigger level of 0.08 mg/m³.⁷³

⁶⁶ *Id.* at Attachment 7, page 19 (GTI 2012 Report). Microbial-influenced corrosion is caused by acids produced by bacteria; it is this acid which induces pitting in metal pipes. Microbial-influenced corrosion can be especially prevalent in gas lines in which moisture has collected, or in wet gas systems. *Id.*

⁶⁷ Particles can usually be removed by filters, sedimentation or centrifugal collectors. *Id.* at Attachment 7, page 18 (GTI 2012 Report).

⁶⁸ *Id.* at Attachment 7, page 18 (GTI 2012 Report).

⁶⁹ Ex. Utilities-2 (Rivera/Raymundo/Frehse) at Appendix A.

⁷⁰ Ex. CRNG-2 (Escudero) at Attachment 7, page 23 (GTI 2012 Report).

⁷¹ Ex. Utilities-3 (Rivera/Raymundo/Frehse) at 10 *referencing* American Society for Materials, Corrosion Handbook vol. 13 at 164-169.

⁷² Ex. CRNG-2 (Escudero) at Attachment 7, page 23 (GTI 2012 Report).

⁷³ Ex. Utilities-2 (Rivera/Raymundo/Frehse) at Appendix A.

The Utilities' proposed trigger level is consistent with professional publications which found that a mercury content of 0.085 mg/m³ is cause for concern.⁷⁴ The primary impact from the presence of mercury in the gas stream is potential corrosion of aluminum metal and alloys used to construct gas processing and measurement equipment.⁷⁵ This is particularly problematic because mercury may concentrate in cryogenic liquids and other processing fluids.⁷⁶

e. Siloxanes

The Utilities propose testing and monitoring for siloxanes in biomethane intended to be injected into the pipeline systems. Specifically, the Utilities suggest a trigger level of 0.01 mg Si/m³ and lower action level of 0.1 mg Si/m³.⁷⁷

The Utilities' proposed siloxane trigger and lower action levels are consistent with the maximum levels recommended by manufacturers of energy generating equipment, which range from 0.01 to 11 mg Si/m³.⁷⁸ The proposed siloxane levels are appropriate because, as the silicon-containing waste stream is anaerobically digested, the silicon converts to siloxane compounds that volatilize and become entrained in the biogas.⁷⁹ When this gas is combusted under high heat and pressure, silicon dioxide is formed.⁸⁰ This silica dust may damage pipeline facilities including internal combustion engines, turbines, and add-on air pollution control devices.⁸¹

B. Initial Gas Quality Review

CARB and OEHHA recommend that prior to injecting biomethane into the pipeline “a representative sample of the biomethane should be tested for the constituents of concern specific to that biogas source to determine the presence of constituents above detection levels, and where

⁷⁴ Ex. Utilities-3 (Rivera/Raymundo/Frehse) at 10 (*referencing* American Society for Materials, Corrosion Handbook vol. 13 at 551).

⁷⁵ Ex. CRNG-2 (Escudero) at Attachment 7, page 24 (GTI 2012 Report).

⁷⁶ *Id.* at Attachment 7, page 24 (GTI 2012 Report).

⁷⁷ Ex. Utilities-2 (Rivera/Raymundo/Frehse) at Appendix A.

⁷⁸ Ex. CRNG-2 (Escudero) at Attachment 7, page 26 (GTI 2012 Report).

⁷⁹ *Id.* at Attachment 7, page 25-26 (GTI 2012 Report).

⁸⁰ *Id.*

⁸¹ *Id.*

found, the associated concentrations of constituents.”⁸² To accomplish this, CARB and OEHHA recommend that “two tests be conducted over a 2-4 week period once the production facility is operational and prior to when the biomethane is first injected into the pipeline to ensure the stability and performance of the upgrading system.”⁸³

The Utilities agree that start-up testing is prudent, but recommend that the Commission adopt modifications to the start-up testing proposed by CARB and OEHHA. First, prior to interconnection, the supplier should sample and analyze both the biogas and biomethane. Comprehensive pre-interconnection analysis of the biogas and biomethane is important to determine the constituents which are present or could be present in the biomethane and enable the Utilities to design an interconnection and testing and monitoring protocols specifically for that biogas source. Next, the utility should perform two start-up tests at the interconnection to determine the biomethane constituents, determine compliance with gas quality standards, and affirm consistent functioning of the upgrading facilities over the course of the initial gas quality review.

i. Start-up Biogas Testing

The first step in determining how to safely introduce biomethane into the Utilities’ pipeline systems is the identification of trace constituents in the biogas source that may adversely impact human health or pipeline facility integrity.⁸⁴ By including the constituents found in the biogas, the Utilities can determine the constituents that are present in the biogas before processing, and develop a testing and monitoring regimen specific to that biogas source that considers the biogas and biomethane constituent concentrations.⁸⁵ Absent biogas testing, it is not possible to fully understand and take appropriate steps to mitigate the potential impact of biomethane on human health and utility pipeline systems.⁸⁶ The Utilities have no control over the conditioning and upgrading facilities responsible for converting raw biogas into pipeline

⁸² Ex. CARB-1 (CARB/OEHHA) at 65.

⁸³ *Id.* (internal citations omitted).

⁸⁴ Ex Utilities-2 (Rivera/Raymundo/Frehse) at 2.

⁸⁵ *Id.*

⁸⁶ Ex. Utilities-1 (Rivera/Raymundo/Frehse) at 15.

quality biomethane and without knowledge of the raw biogas, the Utilities would be unable to test and monitor for potential breakthroughs or failures in the supplier's upgrading and conditioning facilities.⁸⁷

In order to determine the biogas constituent concentrations, the supplier should take representative raw biogas samples (samples of each separate biogas source; *e.g.*, grouped wells or biomass/waste/feedstock-type).⁸⁸ The utility should have the option to observe the taking of the samples.⁸⁹ The samples would be sent to certified independent laboratories for analysis.⁹⁰ The results of the biogas analysis would be shared with the utility to assist in preparing a preliminary recommendation for biomethane testing and on-line monitors.⁹¹

ii. Start-up Biomethane Testing

Once the upgrading and conditioning facilities have been completed, the supplier should collect samples of the processed biomethane for testing.⁹² The utility should have the option to observe the taking of the samples.⁹³ The samples would be sent to certified independent laboratories for analysis.⁹⁴ The results would provide the utility with information on the biomethane constituent levels, allow the utility to finalize the interconnection facilities, and, if the supplier's biomethane test results demonstrate compliance with the gas quality specifications and indicates biomethane constituent levels below the lower action levels, allow the supplier to proceed to the proposed 24-hour start-up test.⁹⁵

During the proposed 24-hour start-up test, the biomethane would begin to flow through the utility's interconnection.⁹⁶ The utility would begin using its on-line monitors to check the biomethane quality and constituent levels.⁹⁷ If the biomethane did not meet the continuously

⁸⁷ Ex. Utilities-2 (Rivera/Raymundo/Frehse) at 2.

⁸⁸ *Id.* at 8.

⁸⁹ *Id.*

⁹⁰ *Id.*

⁹¹ *Id.*

⁹² Ex. Utilities-2 (Rivera/Raymundo/Frehse) at 8-9.

⁹³ *Id.* at 9.

⁹⁴ *Id.*

⁹⁵ *Id.*

⁹⁶ *Id.*

⁹⁷ *Id.*

monitored gas quality specifications, then the flow would stop and the supplier would be asked to take corrective action and arrange for a new 24-hour start-up test.⁹⁸ If the on-line monitors confirmed that the biomethane met the continuously monitored gas quality specifications, the utility would collect samples of the biomethane for trace constituent analysis and stop the flow of biomethane until the trace constituent analysis had been completed.⁹⁹

If the results of the proposed 24-hour start-up test constituent analysis indicated that the biomethane had met gas quality requirements and tested below biomethane constituent lower action levels, then flow would be resumed and the biomethane would be tested again.¹⁰⁰ While awaiting the results of this second utility biomethane analysis, the biomethane would be able to flow into the utility system.¹⁰¹ If the second utility test demonstrated compliance with the gas quality limits and biomethane constituent lower action levels, the biomethane would be accepted by the utility subject to ongoing monitoring and periodic testing.¹⁰²

If at any time during the initial gas quality review the biomethane tested above the lower action level, CARB, OEHHA, and the Utilities recommend that the supplier be denied access, be asked to take corrective action, and then be required to retest the biomethane:

During the pre-injection testing, if any constituent of concern in the biomethane is found to be above the lower action level...then the biomethane cannot be injected into the natural gas pipeline and the operator should make modifications to the upgrading system to lower the concentrations of the constituent of concern to levels below the lower action level.¹⁰³

Once regular operational flow begins, the supplier would be subject to periodic testing based on the biomethane constituents and the concentrations of those constituents.¹⁰⁴

⁹⁸ *Id.*

⁹⁹ *Id.*

¹⁰⁰ *Id.*

¹⁰¹ *Id.*

¹⁰² Ex. CARB-1 (CARB/OEHHA) at 66 (“If all the constituents of concern in the biomethane are found to be below the detection level, or measured in concentrations below the lower action level in both pre-injection tests, then the biomethane may be injected into the common carrier pipeline, subject to compliance with the periodic testing requirements specified below. It is important to note, that these testing requirements do not supersede any other requirements relating to pipeline integrity, heating value, and other requirements not related to health-based standards.”); *see also* Ex. Utilities-2 (Rivera/Raymundo/Frehse) at 9.

¹⁰³ Ex. CARB-1 (CARB/OEHHA) at 66; *see also* Ex. Utilities-2 (Rivera/Raymundo/Frehse) at 10.

¹⁰⁴ Ex. Utilities-2 (Rivera/Raymundo/Frehse) at 9.

C. Ongoing Periodic Testing and Monitoring Protocols

Once the initial gas quality review is complete and regular operations are underway, there is still a need for regular periodic testing to confirm that the biomethane continues to meet biomethane constituent and gas quality requirements. CARB and OEHHA recommend:

Representative samples of the biomethane being injected into a natural gas common carrier pipeline should be periodically tested for constituents of concern ... according to the frequencies specified below.¹⁰⁵

Similarly, the Utilities propose traditional gas quality monitoring and testing protocols applicable to all gas producers¹⁰⁶ and testing and monitoring protocols designed specifically for biomethane constituents to monitor and test biomethane quality, and compliance of the biomethane with stated constituent levels.¹⁰⁷

The Utilities generally support CARB and OEHHA's periodic testing schedule. First, if the biomethane constituents do not test below the trigger level throughout the initial gas quality review's biomethane analysis, the biomethane should be tested quarterly for those constituents above the trigger level.¹⁰⁸ If the biomethane constituent subsequently tests below the trigger level for four consecutive tests, then that constituent may be tested annually.¹⁰⁹

Next, if biomethane constituents are below trigger levels for each biomethane test during the initial gas quality review, then the supplier should be subject to annual testing of biomethane constituents.¹¹⁰ However, if at any time during annual testing a constituent should test above the trigger level, the testing for that constituent should revert back to quarterly testing until the

¹⁰⁵ Ex. CARB-1 (CARB/OEHHA) at 67.

¹⁰⁶ *E.g.*, gas chromatographs, low micron filters, and, as needed, online monitors for H₂S, CO₂, H₂O, total sulfur, or O₂.

¹⁰⁷ Ex. Utilities-2 (Rivera/Raymundo/Frehse) at 4-5.

¹⁰⁸ Ex. CARB-1 (CARB/OEHHA) at 67 ("Any constituents of concern found at or above the trigger level for that constituent of concern [i.e., group 2 compounds] should be monitored quarterly [at least once every 3 months of injection into the common carrier pipeline] and the total potential cancer risk and non-cancer risk estimated."); Ex. Utilities-2 (Rivera/Raymundo/Frehse) at 10.

¹⁰⁹ *Id.* at 68 ("If the quarterly testing over a 12 month period demonstrates that an individual constituent of concern within the group 2 compounds is below the trigger level four consecutive times, then monitoring for that constituent can be reduced to once every 12 months of injection."); *see also* Ex. Utilities-2 (Rivera/Raymundo/Frehse) at 10.

¹¹⁰ Ex. Utilities-2 (Rivera/Raymundo/Frehse) at 9-10.

constituent again tests below the trigger level four consecutive times.¹¹¹

The Utilities' proposal, however, does differ from the CARB and OEHHA recommendations in that the Utilities propose to require annual comprehensive constituent analysis and would not allow for testing in intervals greater than one year. Biomethane should be tested for constituents at least annually, because meeting the trace constituent trigger level may be dependent upon the change-out period of the upgrading and conditioning equipment.¹¹² The process may have high removal efficiency for a year, and then a breakthrough of constituents may occur.¹¹³ As such, at least annually the biomethane should be subject to comprehensive analysis to determine all constituents present in the biomethane and the concentrations of those constituents.¹¹⁴ Depending on the periodic testing schedule, however, the annual comprehensive biomethane testing would replace one of the regularly scheduled periodic tests.

CARB and OEHHA also discuss instances where the periodic test results would indicate a need to deny the biomethane supplier access:

If, in a 12 month period, there are three exceedances of the lower action level for the constituents of concern (with the exceedances being lower than the upper action level), the operator will shut off the supply of the biomethane and determine necessary adjustments to bring the potential cancer and non-cancer risks for the constituents of concern to levels below the lower action level.¹¹⁵

If any test result indicates the potential cancer or non-cancer risks for the constituents of concern is above the upper action level, the operator will shut off the supply of the biomethane to the pipeline and determine necessary adjustments/modifications to bring the potential cancer and non-cancer risk levels to below the lower action level.¹¹⁶

¹¹¹ Ex. CARB-1 (CARB/OEHHA) at 68 ("For example, a group 1 compound subject to annual or biennial testing, could subsequently revert to quarterly testing if it is monitored and found above the trigger level.") *see also* Ex. Utilities-2 (Rivera/Raymundo/Frehse) at 11.

¹¹² Ex. Utilities-2 (Rivera/Raymundo/Frehse) at 10, footnote 17.

¹¹³ *Id.*

¹¹⁴ *Id.* at 10, footnote 19.

¹¹⁵ Ex. CARB-1 (CARB/OEHHA) at 68.

¹¹⁶ *Id.*

The Utilities support denial of access if the biomethane constituents test above the lower action level three times in a twelve month period or above the upper action level once.¹¹⁷ In order to restart flow after denial of access, the supplier should be subject to re-startup test procedures.¹¹⁸

CARB and OEHHA recommend re-startup testing procedures in instances of supplier shut-off or changes to the biomethane source or modification to the upgrading and conditioning facilities:

Repeat of pre-injection startup testing for all the constituents of concern should be conducted with some slight modifications when:

A change in biogas source at the facility or upgrading equipment design that the CPUC, in consultation with the ARB and OEHHA, determines will potentially increase the level of any constituent of concern over the previously measured baseline levels.

Shut-off of biomethane to the pipeline due to testing that indicates a total potential cancer or non-cancer risk for the constituents of concern in biomethane above the upper action level, or 3 exceedances of the lower action level in a 12 month period.¹¹⁹

The Utilities generally support CARB and OEHHA's re-startup testing proposals, but would include two biomethane tests prior to resuming regular operations, rather than one.¹²⁰ If the supplier is required to retest, the supplier should (if necessary) take corrective action and then proceed to modified start-up testing.¹²¹ The supplier should test the biomethane upstream of the interconnection to determine gas quality and constituent levels, and whether the corrective action or modifications to the biogas or upgrading and conditioning facilities impacted the quality of the biomethane.¹²² After receiving the results of this supplier test, and if the biomethane is below the lower action level, flow may resume and the utility can verify the supplier test results by testing

¹¹⁷ Ex. Utilities-2 (Rivera/Raymundo/Frehse) at 11.

¹¹⁸ *Id.*

¹¹⁹ Ex. CARB-1 (CARB/OEHHA) at 66-67.

¹²⁰ *Id.* at 67 ("Under a modified startup procedure, it would not be necessary to conduct two tests over a 2-4 week period prior to reintroducing the biomethane into the pipeline. If the first test demonstrates that all the constituents are below the LAL then injection can resume and it is not necessary to retest prior to injection. However, all the constituents of concern would be reevaluated with regard to periodic testing.")

¹²¹ Ex. Utilities-2 (Rivera/Raymundo/Frehse) at 11.

¹²² *Id.*

the biomethane at the interconnection.¹²³ If the utility's test verifies constituent level and gas quality compliance, flow may continue and the biomethane constituents would be subject to quarterly testing.¹²⁴

Finally, cognizant of the limited availability of continuous on-line monitors for each biomethane constituent, but aware of the possibility that potentially harmful constituents could enter the pipelines in between periodic constituent tests due to issues with the upgrading and conditioning facilities, CARB and OEHHA recommend:

The utility and the biomethane production facility should agree upon a continuous monitoring method to verify that the upgrading process is operating effectively. If a monitoring method cannot be agreed upon, then we recommend that the tariff requirements for natural gas be used as an indicator that the upgrading system is operating effectively.

Consistent with this recommendation, there are instances where testing may be appropriate in-between annual or quarterly tests. As such, the Utilities' proposed periodic testing schedule should not prevent utility action (*e.g.*, additional testing) if the biomethane was at a trigger level, nor should it preclude the Utilities from performing discretionary testing at the interconnect.¹²⁵ Discretionary testing should, however, be driven by something detected by the utility in monitoring the supplier's biomethane or changes to the system or source enacted by the biomethane supplier. For example, intervenors argue that a clean-up system removing CO₂ would also remove every trace constituent.¹²⁶ Therefore, if gas chromatograph readings showed an increase in CO₂ levels, additional biomethane constituent testing would be appropriate because issues with CO₂ clean-up could indicate that the upgrading and conditioning system was also not removing trace constituents.

¹²³ *Id.*

¹²⁴ *Id.*; *see also* Ex. CARB-1 (CARB/OEHHA) at 67 ("This would mean compounds...would have to again go through the testing required to demonstrate eligibility for less frequent testing.")

¹²⁵ *Id.* at 10, footnote 18.

¹²⁶ Ex. CRNG-1 (Escudero) at 3 ("If the cleanup system is removing CO₂, it is also removing trace constituents. While it is possible to scrub or treat trace components from the gas without removing CO₂, it is impossible to remove CO₂ without also removing those same trace constituents.")

D. Test Result Verification

The Utilities do not oppose implementation of a test verification process if there are any Quality Assurance/Quality Control issues, discrepancies, or qualifiers indicated by the certified laboratory testing results.¹²⁷ As in all cases of testing, a certified third party laboratory should test and review data to be in compliance with the criteria specified in the applicable Environmental Protection Agency (EPA) and American Society for Testing and Materials (ASTM) test methods, or as approved by the Commission.¹²⁸ The test results should be shared with both the supplier and the utility.¹²⁹ If necessary, the supplier should remain shut-off during retesting to mitigate the risk of harm to human health and pipeline facilities.¹³⁰

E. Recordkeeping and Reporting Requirements

Reporting should be designed to show compliance with the monitoring and test plan(s) and recordkeeping should be designed to document the same.¹³¹ CARB and OEHHA recommend:

- Suppliers should notify the CPUC (and the CPUC should notify CARB and OEHHA) within 30 days of the date when they first inject into the natural gas common carrier pipeline. Such notification should include the supplier company name, contact person, location of facility and injection point.¹³²
- The testing entity (utility or supplier) should provide the CPUC (and the CPUC should provide CARB and OEHHA) with the “Startup Testing” results within 30 days of receiving the test data. The testing entity should also note whether monitoring and recordkeeping of hydrogen sulfide and mercaptans conducted subject to utility tariff requirements would be used to meet the monitoring and recordkeeping recommended in this document for constituents of concern.¹³³

¹²⁷ Ex. Utilities-3 (Rivera/Raymundo/Frehse) at 13.

¹²⁸ *Id.*

¹²⁹ *Id.*

¹³⁰ *Id.*

¹³¹ *Id.* at 17.

¹³² Ex. CARB-1 (CARB/OEHHA) at 71.

¹³³ *Id.*

- The testing entity (utility or supplier) should maintain records of all test results for at least 3 years from the date when the tests were conducted. These records would not be required for hydrogen sulfide and mercaptans when these compounds are monitored continuously, or more frequently than recommended for constituents of concern in this document, and are subject to utility tariff monitoring and reporting requirements.¹³⁴
- The suppliers and utility should provide an annual report to the CPUC (and the CPUC should provide the report to the CARB and OEHHA) containing the following information:
 - All test data (concentrations of constituents of concern and identification of associated test methods) received during the report period.
 - Annual biomethane production rate.
 - Monitoring parameters used to determine whether the upgrading system is operating effectively.
 - Dates of any shutoff events, the reason for the shutoff, the actions taken to resume injection into the pipeline, and the start of re-injection into the pipeline (if applicable).¹³⁵
- The testing entity (utility or supplier) should provide the non-testing entity the following data:
 - Test results of constituents of concern within two weeks of receiving the data.
 - Test results of constituents of concern within 24 hours of receiving the data when it results in shutoff of biomethane to the pipeline.¹³⁶

The Utilities support CARB and OEHHA's recordkeeping and reporting recommendations subject to the clarification offered below.¹³⁷

¹³⁴ *Id.*

¹³⁵ *Id.* at 71-72.

¹³⁶ *Id.* at 72.

For the biomethane testing at the utility's interconnect, the utility should collect samples and send the samples to independent certified laboratories for constituent analyses.¹³⁸ The results from the laboratories should be shared with the supplier.¹³⁹ Here, the testing entity should be the utility.¹⁴⁰

For the raw biogas testing and testing of the biomethane prior to interconnection, the supplier should gather the sample (though the utility has a right to observe the sample being collected).¹⁴¹ The biogas sample should be sent to independent certified laboratories for constituent analyses.¹⁴² The results from the laboratories should be shared with the utility.¹⁴³ Here, the testing entity should be the supplier.¹⁴⁴

IV. PIPELINE ACCESS RULES

The Utilities' interconnection processes and rules are found in SoCalGas' and SDG&E's Rules 39 and PG&E's Rules 2, 14, and 21 (collectively referred to as the "Interconnection Tariff Rules").¹⁴⁵ The Interconnection Tariff Rules provide the terms of access which govern the supplier's or interconnector's proposed interconnection, interconnection capacity studies, and process for developing an interconnection with each Utility's system.¹⁴⁶

A. Nondiscriminatory Open Access

California Public Utilities Code § 784 requires the Commission to "adopt pipeline access rules that ensure that each gas corporation provides nondiscriminatory open access to its pipeline system to any party for the purposes of physically interconnecting with the gas pipeline system

¹³⁷ Ex. Utilities-2 (Rivera/Raymundo/Frehse) at 11.

¹³⁸ *Id.* at 12.

¹³⁹ *Id.*

¹⁴⁰ *Id.*

¹⁴¹ *Id.*

¹⁴² *Id.*

¹⁴³ *Id.*

¹⁴⁴ *Id.*

¹⁴⁵ Ex. Utilities-1 (Rivera/Raymundo/Frehse) at 24. Southwest Gas' California Tariff does not currently have an Interconnection Rule as Southwest Gas takes all of its gas in California from pipeline companies. Southwest Gas understands that processes and terms allowing biomethane suppliers to connect to its system will need to be developed. *Id.*

¹⁴⁶ *Id.* at 24.

and effectuating the delivery of gas.”¹⁴⁷ Other than limits based on gas quality or system capacity¹⁴⁸, however, access to the Utilities’ pipelines is non-discriminatory, as already approved by the Commission in existing utility tariffs.

In 2004, the CPUC issued an Order Instituting Rulemaking proceeding (Rulemaking 04-01-025) to establish policies and rules to provide reliable, long-term supplies of natural gas to California. In the resulting decision (D.04-09-022), the Commission stated: “[w]e also note that one policy that we are adopting and which appears to be supported by most parties, including potential LNG suppliers, is that new gas supplies should be able to compete on an equal footing with existing supplies.”¹⁴⁹ The Commission ordered: “[w]ithin 30 days of this decision, PG&E, SoCalGas and SDG&E shall submit, for Commission approval, non-discriminatory open access tariffs for *all* new sources of supply, including potential liquefied natural gas (LNG) supplies.”¹⁵⁰ As directed, PG&E, SoCalGas, and SDG&E filed advice letters to implement non-discriminatory open access tariffs for all new sources of supply.¹⁵¹ Decision 04-09-022 did not apply to Southwest Gas; however, Southwest Gas proposes implementing new tariffs that comport with the underlying policies and rules established in D.04-09-022 to document non-discriminatory open access to its system.¹⁵²

Currently, the Utilities’ Interconnection Tariff Rules provide the terms access to each Utility’s system for the purposes of physically interconnecting and delivering natural gas and prohibit each Utility from unduly discriminating against or in favor of gas supplies coming from any source.¹⁵³ For example, SoCalGas and SDG&E’s Tariff Rules 39 provide:

The Utility shall provide nondiscriminatory open access to its system to any party (hereinafter “Interconnector”) for the purpose of physically in interconnecting with the Utility and effectuating the delivery of natural gas,

¹⁴⁷ California Public Utilities Code § 784.

¹⁴⁸ A capacity study will determine the available capacity at the interconnection; with capacity granted on a first come, first served basis. Ex. Utilities-2 (Rivera/Raymundo/Frehse) at 8, footnote 16.

¹⁴⁹ D.04-09-022, mimeo., at 77.

¹⁵⁰ *Id.* at 96, Ordering Paragraph 6 (emphasis added).

¹⁵¹ Ex. Utilities-1 (Rivera/Raymundo/Frehse) at 24.

¹⁵² *Id.* at 25.

¹⁵³ *Id.*

subject to the terms and conditions set forth in this Rule and the applicable provisions of the Utility's other tariff schedules including, but not limited to, the gas quality requirements set forth in Rule No. 30, Section I. None of the provisions in this Rule shall be interpreted so as to unduly discriminate against or in favor of gas supplies coming from any source.

Similarly, PG&E's Tariff Rule 21 provides:

PG&E will provide non-discriminatory interconnection to its pipeline system for an Applicant to deliver new gas supply. Upon interconnection PG&E will provide open access transportation of the gas under the applicable PG&E rate schedules, rules and transportation agreements.

Consistent with these principles, gas meeting the Utilities' Gas Quality Tariff Rules, as revised from time to time, and subject to capacity restraints and the safeguards and rules established in this proceeding, will be accepted into each utility's respective gas pipeline system.¹⁵⁴

B. Necessary Tariff Amendments

Although access is non-discriminatory for gas meeting gas quality specifications, certain amendments are necessary to update gas quality specifications and remove existing restrictions on the introduction of biomethane.

SoCalGas and SDG&E propose modifications to Tariff Rules 30, Section I.¹⁵⁵ These modifications remove existing limits to biomethane acceptance, add a limitation on the acceptance of hazardous waste landfill gas, and add the lower and upper action levels discussed in this Joint Opening Brief.¹⁵⁶ At this time, SoCalGas and SDG&E anticipate including the more detailed testing and recordkeeping procedures implemented in this Rulemaking in the agreements between the utility and supplier.¹⁵⁷ SoCalGas and SDG&E are not proposing modification to their Tariff Rules 39.¹⁵⁸

PG&E proposes modifications to PG&E Gas Rules Nos. 1 (adding definitions of

¹⁵⁴ *Id.*

¹⁵⁵ Ex. Utilities-2 (Rivera/Raymundo/Frehse) at 12.

¹⁵⁶ *Id.*

¹⁵⁷ *Id.*

¹⁵⁸ *Id.*

“Biogas” and “Biomethane” and incorporating biomethane into the definition of “Gas”), 14 (addressing non-discriminatory open access for biomethane supplies), and 21 (requiring a minimum instantaneous flow rate of 5 Dth/hour to ensure the accurate measurement of gas volumes at the Receipt Point; incorporating the biomethane lower and upper action levels discussed in this Joint Opening Brief; adding a limitation on the acceptance of hazardous waste landfill gas; and addressing non-discriminatory open access for biomethane supplies).¹⁵⁹

Southwest Gas proposes incorporating a new Rule into its Tariff applicable to Biomethane Gas (Rule No. 22).¹⁶⁰ Modifications are also proposed to Southwest Gas’ existing Rule Nos. 2 and 21 in conformance with the addition of the new Biomethane Gas Rule.¹⁶¹ Southwest Gas’ Rule 22 includes the maintenance of a ratio of 25% biomethane and 75% traditional natural gas.¹⁶² Southwest Gas pipeline systems located near potential biomethane sources in California are distribution systems or pipelines that directly feed distribution systems in close proximity.¹⁶³ Southwest Gas has historically installed plastic compression and other plastic fittings with soft seals in its distribution systems.¹⁶⁴ There are documented occurrences of similar seals leaking due to the lack of heavy hydrocarbons in LNG causing the seals to shrink.¹⁶⁵ Biomethane has little or no heavy hydrocarbons.¹⁶⁶ Southwest Gas therefore believes a ratio of 25% biomethane to natural gas will insure that the seals within its distribution systems retain sealing integrity.¹⁶⁷

V. ENFORCEMENT PROVISIONS

The standards, requirements, and open access rules that will be adopted in this proceeding will be incorporated into the Utilities’ Gas Quality and Interconnection Tariff

¹⁵⁹ *Id.* at 13.

¹⁶⁰ *Id.*

¹⁶¹ *Id.*

¹⁶² *Id.* at 14.

¹⁶³ *Id.*

¹⁶⁴ *Id.*

¹⁶⁵ *Id.* (referencing *Washington Gas Announces Cause of Unusual Leak Patterns in Prince George's County, Maryland and Identifies Approaches to Prevent Similar Issues*, <http://www.wglholdings.com/releasedetail.cfm?ReleaseID=281358>).

¹⁶⁶ *Id.*

¹⁶⁷ *Id.*

Rules.¹⁶⁸ Any future changes to those tariffs must be reviewed and approved by the Commission, and stakeholders will have the opportunity to protest any proposed changes.¹⁶⁹

If a stakeholder contends that a utility has not complied with one or more of its tariffs, it may protest the alleged noncompliance to the Commission, or the Commission may move to enforce a tariff noncompliance on its own initiative.¹⁷⁰ As stated in the OIR, “Commission enforcement includes, but is not limited to, the assessment of fines and penalties. (See Pub. Util. Code §§ 2100 et seq.)”¹⁷¹ As part of its enforcement authority, the Commission may also obtain injunctive relief.¹⁷² This enforcement authority extends to a utility’s failure to comply with its tariffs.¹⁷³

If a supplier contends that a Utility has enforced its Gas Quality Tariff Rule improperly, it may seek prompt relief from the Commission.¹⁷⁴ The Utilities believe that the existing tariff-based enforcement mechanisms are sufficient to enforce compliance with the standards, requirements and open access rules adopted in this proceeding.¹⁷⁵ As with other sources of supply and open access issues related to those supplies, the existing tariff-based mechanisms enable all stakeholders (and the Commission) to seek enforcement of a Utility’s tariffs, and also enable the Utility to take action to enforce those same standards, requirements and rules to protect its customers and its pipeline system.¹⁷⁶ No additional provisions or amendments to the Utility tariffs are required for the Commission to enforce non-discriminatory access to the Utilities pipeline systems.¹⁷⁷

¹⁶⁸ Ex. Utilities-1 (Rivera/Raymundo/Frehse) at 25. To the extent that gas quality or open access issues are also addressed in GO-112E or the federal code provisions incorporated by GO-112E, Resolution ALJ-274 would apply in addition to the utility tariffs and enable Commission staff to issue citations for violations pursuant to that Resolution. *Id.*

¹⁶⁹ *Id.*

¹⁷⁰ *Id.*

¹⁷¹ Order Instituting Rulemaking into Biomethane Issues, Pipeline Open Access, and Related Enforcement Provisions, issued February 21, 2013, mimeo., at 8.

¹⁷² Ex. Utilities-1 (Rivera/Raymundo/Frehse) at 25.

¹⁷³ *Id.*

¹⁷⁴ *Id.* at 26.

¹⁷⁵ *Id.*

¹⁷⁶ *Id.*

¹⁷⁷ *Id.*

VI. CONCLUSION

For the reasons set forth above and in their testimony, the Utilities respectfully request that the Commission adopt each of the proposed recommendations set forth herein.

DATED at Los Angeles, California, on this 5th day of September, 2013.

Respectfully submitted,¹⁷⁸

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¹⁷⁸ SoCalGas and SDG&E represent that they have been authorized by PG&E and Southwest Gas to sign this Joint Opening Brief on their behalf, consistent with Rule 1.8(d) of the Commission's Rules of Practice and Procedure.